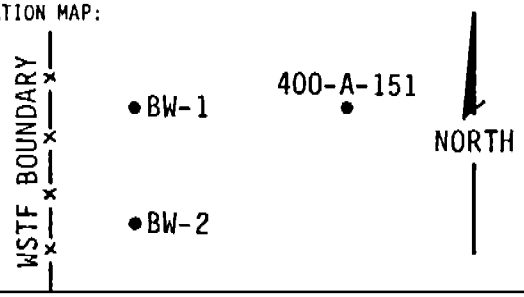
LITHOLOGIC LOG

LOCATION MAP:



NW 1/4 SW 1/4 NW 1/4 SW 1/4 S 35 T 20S R 3E

SITE ID: NASA-WSTF LOCATION ID: BW-1-268

SITE COORDINATES (ft.):

N 230212.08 E 413805.48

GROUND ELEVATION (ft. MSL): 4772.15 (B.C.)

STATE: NEW MEXICO COUNTY: DOÑA ANA

DRILLING METHOD: Mud Rotary and Air-Foam Rotary

DRILLING CONTR.: Larjon Drilling Co.

DATE STARTED: 11 JULY 1988 DATE COMPLETED: 12-7-88

FIELD REP.: R. Cooper, J. Kirby, C. Werden

COMMENTS: 12 1/4" borehole 0'-60' using mud rotary, 8" borehole 60'-300', using air-foam. Total depth = 300'.

Depth to bedrock 185'.

Depth	Visual %	Lith	Drilling Time Scale: min.	Sample Type and Interval	Lithologic Description
				0'-300' cuttings	0'-185' ALLUVIUM (Santa Fe Group): Samples range from very light grey (N8/moist) to black (N1/moist). Natural grains (100% of sample) range from < 0.1 inch to 0.2 inch, subrounded, poor to moderate sorting. The alluvium is an unconsolidated gravelly conglomerate containing calcite, limestone, caliche, clays, volcanics, quartz, and siltstone.
5			17		
10			18		5'-10' Increase in cutting percentage (~50%). Cutting size < 0.1 inch to 0.3 inch. Natural grains < 0.1 inch to 0.2 inch, subrounded, poor to moderate sorting. Increase in amount of caliche and caliche coating. Increase in limestone content.
15			24		
20			24		10'-15' Decrease in caliche content, increase in limestone content. Cutting size < 0.1 inch to 0.7 inch.
25			23		15'-20' Decrease in size (< 0.1 inch to approximately 0.3 inch) and amount of cuttings. Sample is 70% natural grains, 30% drill cuttings.
30			24		20'-25' Increase in amount of cuttings (to 70%) and limestone content.
					25'-30' Increase in amount of caliche.
					30'-35' Decrease in amount of caliche.
35			13		35'-50' 100% cuttings present.
40			13		
45			35		
50			19		50'-55' Decrease in cutting size (< 0.1 inch-0.15 inch).

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
50			19		
55			19		55'-60' Increase in cutting size (< 0.1 inch-0.4 inch). Very high caliche and caliche coating content.
60			50		60'-65' Decrease in cutting size (< 0.1 inch-0.2 inch). Slight decrease in caliche content.
65			9		65'-75' Decrease in caliche content, increase in sandstone content.
70			9		
75			10		75'-90' Increase in cutting size (< 0.1 inch-0.4 inch). Decrease in caliche content, some volcanics present.
80			23		
85			6		
90			12		90'-95' Slight decrease in cutting size to 0.1 inch- 0.25 inch, average size approximately 0.15 inch.
95			7		95'-100' Definite increase in cutting size (0.1 inch-0.6 inch) with average size approximately 0.4 inch. Approximately 50% natural grains, 50% drill cuttings. Some caliche coatings present.
100			12		100'-110' Decrease in cutting size, average size approximately 0.2 inch. Approximately 20% natural grains.
105			6		
110			3		110'-130' Approximately 50% natural grains. Cuttings range from < 0.1 inch-0.45 inch, average size approximately 0.3 inch.
115			4		

Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
115			4		
120			4		
125			4		
130			5		130'-135' Decrease in cutting size (< 0.1 inch-0.3 inch), average size approximately 0.2 inch. 100% cuttings (no natural grains). Increase in amount of limestone.
135			5		135'-145' Increase in cutting size (< 0.1 inch-0.5 inch), average size approximately 0.3 inch. 50% natural grains. Decrease in amount of limestone.
140			32		
145			4		145'-150' 90% cuttings, 10% natural grains present.
150			5		150'-155' Decrease in cutting size (< 0.1 inch-0.3 inch. Caliche and caliche coatings common.
155			8		155'-165' No caliche present. Some slightly consolidated conglomerate fragments present.
160			12		
165			10		165'-170' Increase (up to 20%) in amount of conglomerate.
170			17		170'-180' Decrease in cutting size (< 0.1 inch-0.2 inch). No conglomerate present.
175			17		
180			14		180'-185' 0.1-0.2 inch conglomerate grains common.

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
180			14		
185			17		185'-300' ANDESITE (Orejon): Medium bluish gray (5B 5/1) to greenish black (5G 2/1), less than 0.1 inch-0.25 inch cuttings of porphyritic andesite. Fine- to medium-grained, anhedral to euhedral phenocrysts of plagioclase with minor amounts of mafic minerals. Holocrystalline groundmass (10x hand lens), very fine grained. Greenish altered (epidote/chlorite) zones common. Sample is ~ 20% uphole cuttings of various lithologies.
190			11		190'-200' 100% volcanic cuttings present.
195			9		
200			10		200'-205' Minor white to smokey, anhedral phenocrysts (plagioclase) present.
205			13		205'-210' Epidote/chlorite alteration zones common.
210			6		210'-215' Approximately 25% pinkish-grey, less than 0.1 inch-0.2 inch), very soft andesite present. Amount of andesite containing greenish alteration zones decrease.
215			5		215'-220' No pinkish-grey andesite present. Individual (0.1 inch-0.2 inch) calcite crystals present (<10%).
220			10		220'-225' Calcite fracture filling common. No individual crystals as in 215'-220' interval.
225			10		225'-230' Calcite fracture filling and individual rhombohedral crystals common (~10%).
230			10		230'-235' Cutting size decrease to less than 0.1 inch-0.15 inch. Very slight decrease in amount of calcite.
235			12		235'-250' Slight increase in amount of calcite (fracture fill and crystal).
240			11		
245			19		

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Depth	Visual %	Lith	Drilling Time Scale: min	Sample Type and Interval	Lithologic Description
245			19		
250			13		250'-280' Greenish-grey to grey black andesite present. Cutting size less than 0.1 inch-0.25 inch. Approximately 10% calcite cuttings present.
255			13		
260			19		
265			18		
270			11		
275			10		
280			13		280'-285' Decrease in cutting size (less than 0.1 inch-0.15 inch). Approximately 5% calcite crystals present.
285			16		285'-300' Cutting size increases (less than 0.1 inch to approximately 0.25 inch).
290			17		
295			11		
300			16		Total depth = 300'.
305					
310					